Drawings

1. The replacement drawings were received on July 16, 2008. These drawings are acceptable.

Claim Objections

2. Claims 15 and 28 are objected to because of the following informalities: On line 11 of claim 1 and line 17 of claim 28, replacing "incident," with --incident;-- is suggested. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 15, 16, 21-25 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (hereinafter AAPA) in view of Kamisada (JP 02-166623) and further in view of Ooyama et al. (hereinafter Ooyama) (US 5,136,565). Note that citations to the text of AAPA refer to United States Application Publication No. 2007/0041290, which is the publication of Applicant's US Application No. 10/556,066. Also note that citations to the text of Kamisada refer to the English translation of the Abstract provided in Applicant's November 8, 2005 Information Disclosure Statement.

In regard to claim 15, AAPA discloses an optical head (Figs. 13-16), comprising: a light source (Figs. 15 and 16, element 2); a light flux separation element (Fig. 15, element 8) that separates a light flux emitted from the light source for at least a first light flux ("Part of the light

fluxes [that] passes through beam splitter 8a" of Paragraph 0015) and a second light flux ("the rest of the light fluxes [that] are reflected on the beam splitter 8a" of Paragraph 0015) to come out therefrom; an objective lens (Figs. 13-15, element 11) on which the first light flux is incident to be collected on an optical information recording medium (Fig. 15B, element 13); a light-receiving element (Fig. 15A, element 36) on which the second light flux is incident; an arithmetic circuit that adjusts a quantity of light emitted from the light source in response to a quantity of light incident on the light-receiving element ("arithmetic circuit (not shown) that controls a quantity of light emitted from the semiconductor laser 2 in response to a quantity of light received on the light-receiving element 36" of Paragraph 0012); a photo-detector (Fig. 16, elements 24-27) on which reflected light from the optical information medium is incident (Paragraph 0013); an optical stand (Figs. 13 and 14, element 19); a holder (Fig. 13, element 12) that holds the objective lens to be movable in a focus direction and in a tracking direction (Paragraph 0011); a base (Figs. 13 and 14, element 15) fixed to the optical stand and supporting the holder (Paragraph 0011); and an arch-shaped linking member provided to the base (arch-shaped linking member of base 15 of Fig. 13 which corresponds to the arch-shaped linking member 15b of base 15 of Fig. 1), wherein the light flux separation element has a light exiting-surface from which the second light flux comes out and the light-receiving element has a light incident-surface on which the second light flux is incident (Fig. 15).

AAPA does not disclose that the light exiting-surface of the light flux separation element is laminated to the light incident-surface of the light-receiving element, wherein the light-receiving element is disposed so as to be set inside the base together with the light flux separation element through the arch-shaped linking member.

Kamisada discloses a light flux separation element (Figs. 1 and 2, element 10) that separates a light flux (Figs. 1 and 2, element 2a) emitted from a light source (Fig. 1, element 1) for at least a first light flux (Figs. 1 and 2, element 2b) and a second light flux (Figs. 1 and 2, element 2c) to come out therefrom; and a light-receiving element (Figs. 1 and 2, element 12) on which the second light flux is incident; wherein a light exiting-surface of the light flux separation element from which the second light flux comes out is laminated to a light incident-surface of the light-receiving element on which the second light flux is incident (Fig. 2 and note element 13). Kamisada teaches that by doing so, the light receiving element is "accurately fixed" to the light flux separation element "so that misalignment is surely prevented" using a "simple and economical production process[]" (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the light exiting-surface of the light flux separation element of AAPA to be laminated to the light incident-surface of the light-receiving element of AAPA as suggested by Kamisada, the motivation being for the light receiving element of AAPA to be accurately fixed to the light flux separation element of AAPA so that misalignment is surely prevented using a simple and economical production process.

AAPA in view of Kamisada does not disclose that the light-receiving element is disposed so as to be set inside the base together with the light flux separation element through the arch-shaped linking member. However, it is noted that the light flux separation element of AAPA in view of Kamisada includes a half-mirror (Fig. 15A, element 8a of AAPA) which separates the light flux (Paragraph 0015 of AAPA).

Ooyama discloses an optical head (Figs. 1-4), comprising: a light source (Figs. 1-3, element 41); a half-mirror (Fig. 1-3, element 43) that reflects a light flux emitted from the light source for at least a first light flux to come out therefrom (Col. 3, lines 53-61); an objective lens (Fig. 1-4, element 4) on which the first light flux is incident to be collected on an optical information recording medium (see Col. 1, lines 6-14); a photo-detector (Figs. 1-3, element 46) on which reflected light from the optical information medium is incident (Col. 3, lines 61-68); an optical stand (Figs. 1-3, element 1); a holder (Figs. 1-4, element 5) that holds the objective lens to be movable in a focus direction and in a tracking direction (Col. 6, lines 34-48); a base (Figs. 1-4, element 3) fixed to the optical stand and supporting the holder (Figs. 1-4); and an arch-shaped linking member provided to the base (Figs. 1, 3 and 4, portions of base 3 to which wire holding members 38 are attached and the portion of base 3 linking the portions of base 3 to which wire holding members 38 are attached), wherein the half-mirror is disposed so as to be set inside the base through the arch-shaped linking member (Fig. 1 and note that half-mirror is inside the base even though not entirely inside the base (see Applicant's Fig. 5A in which elements 8 and 36 are inside base 15 even though not entirely inside base 15)) "to provide an optical [head] which can be compacted in its entirety" (Col. 2, lines 19-21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the light flux separation element of AAPA in view of Kamisada, which includes a half-mirror, to be set inside the base AAPA in view of Kamisada through the arch-shaped linking member AAPA in view of Kamisada as suggested by Ooyama, the motivation being for the optical head of AAPA in view of Kamisada to be compacted entirely. In addition, because the light flux separation element of AAPA in view of Kamisada is laminated the light-receiving

element of AAPA in view of Kamisada, in the optical head of AAPA in view of Kamisada and further in view of Ooyama, the light-receiving element of AAPA in view of Kamisada is disposed so as to be set inside the base together with the light flux separation element through the arch-shaped linking member of AAPA in view of Kamisada.[1] Furthermore, using the known technique of disposing elements of an optical head so as to be set inside a base through an arch-shaped linking member to compact the optical head would have been obvious to one of ordinary skill in the art at the time of the invention.

In regard to claim 16, Kamisada discloses that the light exiting-surface of the light flux separation element from which the second light flux comes out is laminated to the light incident-surface of the light-receiving element on which the second light flux is incident via an adhesive layer (Fig. 2, element 13).

In regard to claims 21-24, AAPA in view of Kamisada discloses the optical head of claim 16 but does not specify the transmission wave aberration of the adhesive layer and therefore does not disclose that the transmission wave aberration of the adhesive layer is set between 60 mλ and 200 mλ inclusively.

However, Kamisada discloses an adhesive layer (Fig. 2, element 13) which laminates the light exiting-surface of the light flux separation element from which the second light flux comes out to the light incident-surface of the light-receiving element on which the second light flux is incident (see rejection of claims 15 and 16 over AAPA in view of Kamisada and further in view

[1] Any modifications needed to compact the to the optical head of AAPA in view of Kamisada entirely by disposing the light-receiving element of AAPA in view of Kamisada so as to be set inside the base together with the light flux separation element through the arch-shaped linking member of AAPA in view of Kamisada, such as expanding the size of the arch-shaped linking member of AAPA in view of Kamisada to accommodate the light-receiving element and light flux separation element, would be well within the ability of one of ordinary skill in the art at the time of the invention.

of Ooyama above). Because the adhesive layer of Kamisada inherently has a transmission wave aberration set at a level sufficient for the detection of the second light flux, the general conditions of claims 21-24 are disclosed in the prior art. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation" (MPEP 2144.05(II)(A) quoting *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)).

"A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation" (MPEP 2144.05(II)(A) citing *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977)). Transmission wave aberration of an adhesive layer is recognized as a result-effective variable because decreasing transmission wave aberration decreases wavefront aberration while increasing transmission wave aberration simplifies and reduces the cost of producing the adhesive layer by increasing the tolerance for thickness variation (see Col. 11-24 of Nishiyama et al. (hereinafter Nishiyama) (US 6,580,674)).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the transmission wave aberration of the adhesive layer of AAPA in view of Kamisada and further in view of Ooyama to be set between 60 mλ and 200 mλ inclusively, the motivation being the "normal desire of scientists or artisans to improve upon what is already generally known" (MPEP 2144.05(II)(A) quoting *In re Peterson*, 315 F.3d 1325 at 1330, 65 USPQ2d 1379 at 1382 (Fed. Cir. 2003).

In regard to claim 25, Kamisada discloses that the adhesive layer is made of UV-curing adhesive (Abstract).

In regard to claim 28, the combination of AAPA in view of Kamisada and further in view of Ooyama disclose an optical information medium driving device, comprising: the optical head of claim 15 (see the rejection of claim 15 over AAPA in view of Kamisada and further in view of Ooyama above); a focus control circuit (Fig. 13 of AAPA, element 18a) that controls the optical head on the basis of a focus error signal ("Focus Error Signal" of Fig. 16 of AAPA) obtained from the optical head (Paragraphs 0011 and 0019); and a tracking control circuit (Fig. 13 of AAPA, element 18b) that controls the optical head on the basis of a tracking error signal ("Tracking Error Signal" of Fig. 16 of AAPA) obtained from the optical head (Paragraphs 0011 and 0019).

4. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Kamisada and further in view of Ooyama as applied to claim 16 above, and further in view of Kondo (US 2003/0053404).

AAPA in view of Kamisada and further in view of Ooyama discloses the optical head of claim 16 but does not specify the light transmittance of the adhesive layer and therefore does not disclose that the adhesive layer has a light transmittance between 60% and 80% inclusively.

Kondo discloses an adhesive transparent layer having a light transmittance between 60% and 80% inclusively (Paragraph 0120).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the adhesive layer of AAPA in view of Kamisada to have a light transmittance between 60% and 80% inclusively as suggested by Kondo, the motivation being for the adhesive

layer of AAPA in view of Kamisada and further in view of Ooyama to be transparent so as to avoid the difficulty in stable control of the light source of AAPA in view of Kamisada and further in view of Ooyama caused by a decrease in the light-quantity introduced on the light-receiving element of AAPA in view of Kamisada and further in view of Ooyama and a decrease in the accuracy of the light quantity detected (note that this is motivation comes from knowledge generally available to one of ordinary skill in the art at the time of the invention (see Col. 4, lines 49-62 of Saimi et al. (US 5,640,380))).

5. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Kamisada and further in view of Ooyama as applied to claim 16 above, and further in view of Nishiyama.

In regard to claim 21, AAPA in view of Kamisada and further in view of Ooyama discloses the optical head of claim 16 but does not specify the transmission wave aberration of the adhesive layer and therefore does not disclose that the transmission wave aberration of the adhesive layer is set to 20 mλ or larger.

Nishiyama discloses setting the transmission wave aberration of an adhesive layer to 20 mλ or less "to minimize the wavefront aberration" (Col. 8, lines 11-24).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to set the transmission wave aberration of the adhesive layer of AAPA in view of Kamisada and further in view of Ooyama to 20 mλ or less as suggested by Nishiyama, the motivation being to minimize the wavefront aberration.

"In the case where the claimed ranges 'overlap or lie inside ranges disclosed by the prior art' a prima facie case of obviousness exists" (MPEP 2144.05(I) quoting *In re Wertheim*, 541

F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)). Here, the claimed range of 20 mλ or larger overlaps the range of 20 mλ or less disclosed by the prior art. As a result, prima facie case of obviousness exists.

In regard to claim 22, Nishiyama discloses that the transmission wave aberration of the adhesive layer of AAPA in view of Kamisada and further in view of Ooyama and further in view of Nishiyama is set to 300 mλ or smaller (Col. 8, lines 11-24).

Response to Arguments

6. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ng et al. (US 6,351,445) disclose an optical head (Figs. 3 and 5), comprising: a light source (element 14); a light flux separation element (half-mirror 12); an objective lens (element 14); an optical information recording medium (Fig. 3, element 3); a light-receiving element (element 15); a photo-detector (element 10); a lens holder (element 20); a base (element 7); wherein the light-receiving element is disposed so as to be set inside the base together with the light flux separation element (Figs. 3 and 5).

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V. Battaglia whose telephone number is (571)272-7568. The examiner can normally be reached on M-F, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A. Wellington can be reached on (571) 272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael V. Battaglia/
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